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Test 1217: Ford 6600 and 6700 Diesel 8-Speed

Tractor Museum
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NEBRASKA TRACTOR TEST 1217 – FORD 6600 DIESEL 8-SPEED (ALSO FORD 6700 DIESEL 8 SPEED)

POWER TAKE-OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1020 rpm)								
70.56	2100	4.631	0.458	15.24	209	58	75	28.963
Standard Power Take-off Speed (1000 rpm)—One Hour								
70.07	2059	4.540	0.452	15.43	209	57	75	28.965
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
64.46	2257	4.211	0.456	15.31	197	58	76	.....
0.00	2347	1.286	.....	.....	167	57	75	.....
32.61	2293	2.658	0.569	12.27	170	57	75	.....
70.67	2100	4.650	0.459	15.20	206	57	75	.....
16.62	2318	1.966	0.825	8.45	167	57	75	.....
48.52	2268	3.334	0.479	14.55	173	57	75	.....
Av 38.81	**2264**	**3.018**	**0.542**	**12.86**	**180**	**57**	**75**	**28.950**

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Fuel Consumption Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barometer inches of Mercury
VARYING DRAWBAR POWER AND FUEL CONSUMPTION WITH BALLAST											
Maximum Available Power—Two Hours 4th Gear											
55.68	4626	4.51	2100	7.49	4.535	0.568	12.28	194	62	69	28.695
75% of Pull at Maximum Power—Ten Hours 4th Gear											
48.79	3746	4.88	2235	5.89	3.839	0.549	12.71	185	66	82	28.811
50% of Pull at Maximum Power—Two Hours 4th Gear											
33.58	2472	5.09	2283	3.89	2.957	0.614	11.35	172	67	86	28.795
50% of Pull at Reduced Engine Speed—Two Hours 6th Gear											
33.99	2496	5.11	1531	3.92	2.420	0.497	14.05	172	66	72	28.690
MAXIMUM POWER WITH BALLAST											
36.56	7131	1.92	2286	13.49	2nd Gear			169	61	75	28.850
57.06	6871	3.11	2100	12.99	3rd Gear			200	62	78	28.860
59.53	4994	4.47	2099	8.31	4th Gear			205	62	77	28.850
61.34	4227	5.44	2103	6.91	5th Gear			208	63	79	28.860
61.36	3331	6.91	2100	5.21	6th Gear			210	64	80	28.860
58.02	1750	12.44	2100	2.81	7th Gear			208	64	82	28.860

VARYING DRAWBAR PULL AND TRAVEL SPEED WTH BALLAST—4th Gear						
Pounds Pull	4994	5214	5247	5341	5537	5094
Horsepower	59.53	55.65	49.75	44.20	39.11	30.30
Crankshaft Speed rpm	2099	1890	1680	1469	1260	1052
Miles Per Hour	4.47	4.00	3.56	3.10	2.65	2.23
Slip of Drivers %	8.31	8.80	8.80	8.93	9.42	8.55

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power—Two Hours	96.5
75% of Pull at Maximum Power—Ten Hours	96.5
50% of Pull at Maximum Power—Two Hours	93.5
50% of Pull at Reduced Engine Speed—Two Hours	92.0
Bystander in 8th Gear	90.5

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi	Two 18.4-30; 6; 16	Two 18.4-30; 6; 16
Ballast	—Liquid	1150 lb each	None
	Cast Iron	600 lb each	None
Front Tires	—No., size, ply & psi	Two 7.50-16; 6; 36	Two 7.50-16; 6; 36
Ballast	—Liquid	None	None
	Cast Iron	140 lb each	None
Height of drawbar		22.5 inches	22.5 inches
Static weight with operator—rear		7350 lb	3850 lb
front		2310 lb	2030 lb
total		9660 lb	5880 lb

Department of Agricultural Engineering

Dates of Test: June 14 to 23, 1976

Manufacturer: FORD MOTOR COMPANY, Tractor Operations, 2500 East Maple Road, Troy, Michigan 48084

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 51.8 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8376 **Weight per gallon** 6.974 lb **Oil SAE** 30 **API service classification** SB/SE-CA/CD **To motor** 1.955 gal **Drained from motor** 1.712 gal **Transmission and final drive lubricant** Ford M2C53A **Total time engine was operated** 46.5 hours.

ENGINE Make Ford Diesel **Type** 4 cylinder vertical **Serial No.** *E055415* **Crankshaft** mounted lengthwise **Rated rpm** 2100 **Bore and stroke** 4.4″ x 4.2″ **Compression ratio** 16.3 to 1 **Displacement** 256 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** oil bath wire mesh with centrifugal precleaner **Oil filter** full flow cotton screw-on cartridge **Oil cooler** radiator for transmission and hydraulic oil **Fuel filter** nylon gauze at bottom of fuel tank and paper element **Muffler** vertical **Cooling medium temperature control** thermostat.

CHASSIS: Type standard **Serial No.** C505813 **Tread width** rear 56″ to 80″ front 52″ to 80″ **Wheel base** 87.5″ **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 27.3″ Vertical distance above roadway 32.95″ Horizontal distance from center of rear wheel tread 0.02″ to the right **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** first 1.5 second 2.0 third 3.5 fourth 4.7 fifth 5.6 sixth 7.0 seventh 12.4 eighth 16.8 reverse 2.3 and 8.1 **Clutch** single plate dry disc operated by foot pedal **Brakes** oil cooled multiple disc mechanically operated by foot pedals which can be locked together **Steering** power assist **Turning radius** (on concrete surface with brake applied) right 120″ left 120″ (on concrete surface without brake) right 138″ left 138″ **Turning space diameter** (on concrete surface with brake applied) right 252″ left 252″ (on concrete surface without brake) right 291″ left 291″ **Belt pulley** 1072 rpm at 2050 engine rpm diameter 11″ face 6.5″ **Belt speed** 3087 fpm **Power take-off** 1000 rpm at 2059 engine rpm and 540 rpm at 1900 engine rpm.

REPAIRS and ADJUSTMENTS: No. 3 injection line leaked and was replaced during preliminary PTO test.

REMARKS: Coolant overflowed from radiator at conclusion of 10 hour test. All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was 153°F. Six gears were chosen between stability limit and 15 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1217.**

LOUIS I. LEVITICUS
Engineer-in-Charge

G. W. STEINBRUEGGE, Chairman
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Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
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EXPLANATION OF TEST REPORT

GENERAL CONDITIONS

Each tractor is a production model equipped for common usage. Power consuming accessories may be disconnected only when the means for disconnecting can be reached from the operator station. Additional weight can be added as ballast if the manufacturer regularly supplies it for sale. The static tire loads and the inflation pressures must conform to recommendations in the Tire Standards published by the Society of Automotive Engineers.

PREPARATION FOR PERFORMANCE RUNS

The engine crankcase is drained and refilled with a measured amount of new oil conforming to specifications in the operators manual. The fuel used and the maintenance operations must also conform to the published information delivered with the tractor. The tractor is then limbered-up for 12 hours on drawbar work in accordance with the manufacturer's published recommendations. The manufacturer's representative is present to make appropriate decisions regarding mechanical adjustments.

The tractor is equipped with approximately the amount of added ballast that is used during maximum drawbar tests. Prior to the maximum power run the tire tread-bar height must be at least 65% of new tread height.

POWER TAKE-OFF PERFORMANCE

Maximum Power and Fuel Consumption. The manufacturer's representative makes carburetor, fuel pump, ignition and governor control settings which remain unchanged throughout all subsequent runs. The governor and the manually operated governor control lever is set to provide the high-idle speed specified by the manufacturer for maximum power. Maximum power is measured by connecting the power take-off to a dynamometer. The dynamometer load is then gradually increased until the engine is operating at the rated speed specified by the manufacturer for maximum power. The corresponding fuel consumption is measured.

Varying Power and Fuel Consumption. Six different horsepower levels are used to show corresponding fuel consumption rates and how the governor causes the engine to react to the following changes in dynamometer load: 85% of the dynamometer torque at maximum power; minimum dynamometer torque, ½ of the 85% torque; maximum power, ¼ and ¾ of the 85% torque. Since a tractor is generally subjected to varying loads the average of the results in this test serve well for predicting the fuel consumption of a tractor in general use.

DRAWBAR PERFORMANCE

All engine adjustments are the same as those used in the belt or power take-off tests.

Varying Power and Fuel Consumption With Ballast. The varying power runs are made to show the effects of speed-control devices (engine, governor, automatic transmission, etc.) on horsepower, speed and fuel consumption. These runs are made around the entire test course which has two 180 degree turns with a minimum radius of 50 feet. The drawbar pull is set at 4 different runs as follows: (1) as near to the pull at maximum power as possible and still have the tractor maintain the travel speed at maximum horsepower on the straight sections of the test course; (2) 75% of the pull at maximum power; (3) 50% of the pull at maximum power; and (4) maintaining the same load and travel speed as in (3) by shifting to a higher gear and reducing the engine rpm.

Maximum Power with Ballast. Maximum power is measured on straight level sections of the test course. Data are shown for not more than 6 different gears or travel speeds. Some gears or travel speeds may be omitted because of high slippage of the traction members or because the travel speed may exceed the safe limit for the test course. The manufacturer's representative has the option of selecting one gear or speed over eight miles per hour. The maximum safe speed for the Nebraska Test Course has been set at 15 mph. The slip limits have been set at 15% and 7% for pneumatic tires and steel tracks or lugs, respectively. Higher slippage gives widely varying results.

Varying Drawbar Pull and Travel Speed with Ballast. Travel speeds corresponding to drawbar pulls beyond the maximum power range are obtained to show the "lugging ability" of the tractor. The run starts with the pull at maximum power; then additional drawbar pull is applied to cause decreasing speeds. The run is ended by one of three conditions: (1) maximum pull is obtained, (2) the maximum slippage limit is reached, or (3) some other operating limit is reached.

SOUND MEASUREMENT

Sound is recorded during each of the Varying Power and Fuel Consumption runs as the tractor travels on a straight section of the test course. The dB(A) sound level is obtained with the microphone located near the right ear of the operator. Bystander sound readings are taken with the microphone placed 25 feet from the line of travel of the tractor.

An increase of 10 dB(A) will approximately double the loudness to the human ear.

For additional information about the **Nebraska Tractor Tests** write to the **Department of Agricultural Engineering, University of Nebraska, Lincoln, Nebraska 68583.**

FORD 6600 DIESEL—8 SPEED